

# Innovative Solution for Skin Tears

## New Absorbent Acrylic Wound Technology



The Wound Clinic Team at the SAH

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### Background

Our most visible organ, the skin, sustains itself throughout most of life's knocks, bumps and bruises. As we get older however, these common place little accidents can become increasingly problematic. The robust nature of our skin becomes ever more fragile and simple traumas can readily lead to skin laceration or tearing.

Edwards et al, (1998) found in a survey of Melbourne nursing homes that skin tears were the most common wound by weight of number, when compared to pressure ulcers and leg ulcers. It comes as no surprise then, that 88% of skin tears happen in individuals aged 65 years or older (Malone et al, 1991).

Ratliff and Fletcher, (2007) state that skin tears are a result of friction alone or shearing and friction, that separates the epidermis from the dermis, or that separates both the epidermis and dermis from underlying structures. These wounds usually bleed, are often painful, require meticulous care in order to minimise tissue loss and generally indicate a heightened predisposition to similar injury over time.

Damage from oxygen-free radicals has a significant impact on multiple organ structures and on their performance. As the available number of anti-oxidants decrease with age, damage to cell membranes, proteins and DNA gradually increases.

This becomes apparent in the cutaneous layers as the amount of collagen, elastin, hyaluronic acid and glycoaminoglycans decline, adipose tissue becomes less dense. Sweat and sebum gland activity is reduced. Capillary vessel walls become fragile.

The end result is skin, that becomes thin, dry, wrinkled and structurally weaker. It is also more vulnerable to sensitising agents, skin cancers and is progressively more susceptible to infection (Grey and Harding, 2006). These changes can be accelerated or compounded by lifestyle factors [smoking and excessive sun exposure being examples], disease pathologies [cancers and their treatments, renal and hepatic failure] and drug therapies [steroids, NSAIDS].

A recent and important advance in the assessment and management of skin tears has been the publication of the Skin Tear Audit Research (STAR) study's findings which includes the categorisation of skin tear presentation and guidelines for clinical intervention (Carville et al, 2007).

### Case Study

Mr D is a 90 year old war veteran who lives in a hostel villa. He is cognitively alert and able to self-care in most respects. He has had bilateral hip and knee replacements. He is mobile with a walking frame. He has been successfully treated for throat cancer. Current issues for which he requires assistance are hypertension and urinary incontinence.

On a weekend afternoon Mr D had an accident whilst ambulating with his walker frame. Having hit an obstruction with the frame he fell forward towards his left side and sustained a complex skin laceration to the medial left forearm and elbow. The injury was a Category 2B skin tear (STAR Classification), concomitant with some complete cutaneous flap loss.

Staff at the hostel had stopped the bleeding and had made an attempt to replace the remaining tissue flaps, prior to dressing and bandaging the site. Mr D was seen at the Wound Clinic two days later.



*Photograph 1*

On presentation, (see photograph 1) the wounds were clean and displayed a low volume of serous exudate. Considerable local bruising and mild oedema was noted. The elbow's larger skin flap was adherent onto the wound base but the adjacent smaller flap was mobile and partially "rolled-under" on itself [this was also evident on the smaller forearm wound].

The wound sites were smeared with 2% Lignocaine Gel with Chlorhexidine (Pfizer Pty Ltd) and given a 5-minute dwell time in order for the exposed wound bed to go numb. Once the Gel was cleansed away, the mobile skin flaps were debrided and relocated onto the vascular wound base. This "pinch-graft" style technique allowed a large surface area of the wound to be covered thereby minimising the amount of epithelial resurfacing required to close the defect (see photograph 2).



Photograph 2

Satisfactory “bonding” of the unrolled and debrided tissue flaps was apparent within a number of minutes. The sites were then secured and protected with Mepitel™, (Molnlycke™ Health Care), ensuring a very generous overlap onto the surrounding intact skin (photograph 3). An absorbent pad and generous bandaging completed the dressing procedure.



Photograph 3

Mr D was reviewed in the Wound Clinic 7 days later. The dressing and bandages had remained intact throughout this period of time. On examination it was observed that 100% of the re-attached skin flaps had taken, leaving only 20% of the elbow’s wound surface area still requiring closure (photograph 4).



Photograph 4

The skin on and around the elbow wound was then painted with 3M Cavilon™ No Sting Barrier Film (3M Healthcare) and then covered with a 3M Tegaderm™ Absorbent Clear Acrylic Dressing (3M Healthcare) (photograph 5).



Photograph 5 - Tegaderm Absorbent in place - allowing easy and continual observation of the skin tear and its surrounding skin

Tegaderm Absorbent provided the following advantages :

1. The adequate surface area of the dressing, inclusive of adherence to the surrounding intact skin, ensured stabilisation of the injury site thereby averting any shearing force over the newly closed flaps.
2. The acrylic central pad provided absorbency for the small volume of serous discharge, which was evident in the open defect. This prevented any maceration to the re-epithelialised wound.
3. The dressing was transparent allowing easy and continual observation of the skin tear lesion and its surrounding skin.
4. The dressing generated considerable warmth as the acrylic pad provided excellent insulation, thereby promoting cellular mitotic activity.
5. The dressing was easy to remove without causing skin trauma or putting the newly repaired skin flaps at risk.

Mr D was seen in the Wound Clinic once more, 7 days after the application of the Tegaderm Absorbent. Near completed epithelial closure was displayed. The surrounding skin had returned to a normal colour and no oedema was evident. Tegaderm Absorbent was applied for one more week, after which time the skin laceration had fully closed, requiring no further dressing therapy.

## Conclusion

The combination of Cavilon No Sting Barrier Film and Tegaderm Absorbent is a valuable tool for securing, protecting and facilitating the closure of skin tear wounds.

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PB 3307/02.08

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